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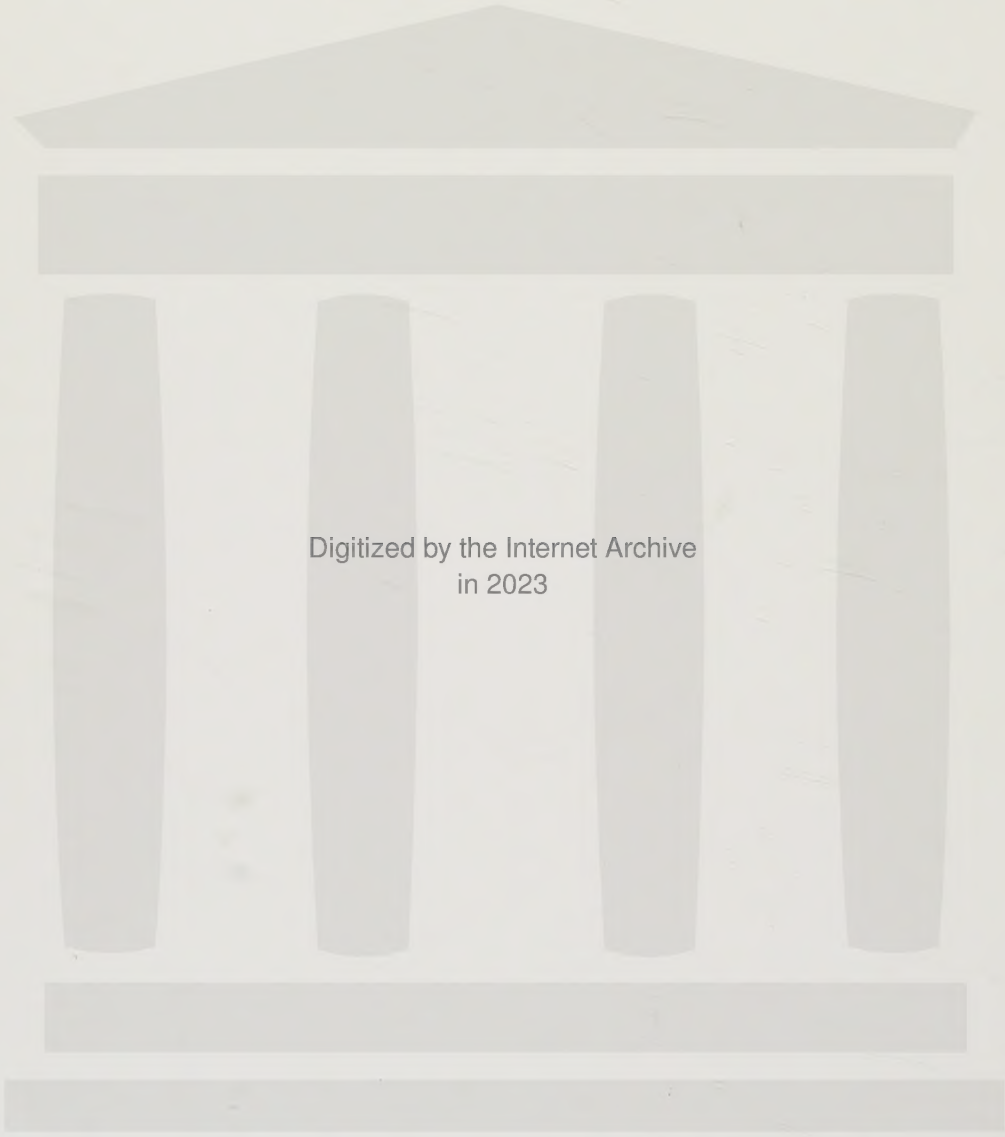

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Abbreviations used in the Index

a.c.	alternating current
d.c.	direct current
h.v.	high voltage
l.v.	low voltage
a.f.	audio frequency
i.f.	intermediate frequency
r.f.	radio frequency, including:—
v.l.f.	very low frequency, <30 kc/s
l.f.	low frequency, 30–300 kc/s
m.f.	medium frequency, 300–3000 kc/s
h.f.	high frequency, 3–30 Mc/s
v.h.f.	very high frequency, 30–300 Mc/s
u.h.f.	ultra high frequency, >300 Mc/s
a.m.	amplitude modulation
f.m.	frequency modulation
p.m.	pulse modulation, including:—
p.a.m.	pulse amplitude modulation
p.c.m.	pulse code modulation
p.f.m.	pulse frequency modulation
p.ph.m.	pulse phase modulation
p.p.m.	pulse position modulation
p.w.m.	pulse width modulation
ph.m.	phase modulation
v.m.	velocity modulation
c.w.	continuous wave
i.c.w., m.c.w.	modulated c.w.
s.w.*	short wave
u.s.w.*	ultra short wave
λ	wavelength
c.r.	cathode ray
c.r.o.	cathode-ray oscilloscope
d.f.	direction finding
e.m.	electromagnetic, *but*
e.m.f.	electromotive force
e.s.	electrostatic
a.f.c.	automatic frequency control
a.g.c.	automatic gain control
a.ph.c.	automatic phase control
a.v.c.	automatic volume control
m.u.f.	maximum usable frequency
p.p.i.	plan position indicator
s.s.b.	single sideband
d.s.b.	double sideband
s.w.r.	standing-wave ratio
v.f.o.	variable-frequency oscillator
R/T	radiotelephony
W/T	wireless telegraphy
TV	television

* *No clearly defined limits*

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102	In line 4, for 'August' read '1959'
333	Change U.D.C. number to 621.316.722.1 : 621.382.2
405	In line 6, for '1 500 bits' read '1 500 bits/in.'
488	In title, for 'Radiation' read 'Radiated'
591	In line 6, for 'proportioned' read 'proportional'
614	Add 'J. Vine' as co-author
705	For 'S. D. Gvozdover' read 'S. D. Gvozdover'
942	Change U.D.C. number to 537.311.33 : 546.28
1263	In journal reference, page numbers should read 990–992
1513	In line 6, for 'resonant' read 'remanent'
1739	Change U.D.C. number to 535.376 :681.61
1951	In line 7, for 'elements' read 'electrons'
1987	For 'A. J. Smuda' read 'A. J. Zmuda'
2126	Change U.D.C. number to 621.317.74
2535	Change U.D.C. number to 621.397.13 :621.395.625.3
2603	In title, for 'V.H.F.' read 'U.H.F.'
2649	In line 7, for 'm/μs' read 'mμs'
2750	In line 6, for 'estimated for' read 'estimated from'
2761	In line 4, for 'Fylingside Moor' read 'Fylingdales Moor'
2782	For 'J. P. Suthet' read 'J. P. Suchet'
2801	In line 7, for 'interpolated' read 'interpreted'
2871 & 2921	For 'E. Giva' read 'E. Giua'
3092	In title, for '1960 Iota' read '1959 Iota'
3099	In journal reference, for 'Vol. 64' read 'Vol. 65'
3232	Change U.D.C. number to 621.375.9 : 621.372.44 : 531.6
3980	In line 6, for 'Mc/s' read 'kMc/s'

IN PAPERS ABSTRACTED

The practice of allocating individual abstract numbers to corrections has been largely discontinued; a list of published corrections noted during 1960 is given below. The journal in which the correction appeared was in each case the same as that in which the original paper was published.

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730 of 1957	15th Dec. 1959, Vol. 116, No. 6, p. 1620
323 of 1958	March 1960, Vol. 21, No. 1, p. 145
3703 of 1958	Jan. 1960, Vol. AP-8, No. 1, p. 77
3718 of 1958	March 1960, Vol. 48, No. 3, p. 328
367 of 1959	July 1960, Vol. 48, No. 7, p. 1232
2497 of 1959	Sept. 1959, Vol. 5, No. 4, p. 238
3401 of 1959	15th Jan. 1960, Vol. 4, No. 2, p. 92
3588 of 1959	March 1960, Vol. 48, No. 3, p. 316
3763 of 1959	7th Sept. 1959, Vol. 249, No. 10, p. 952
3875 of 1959	Feb. 1960, Vol. 48, No. 2, p. 200
4052 of 1959	Feb. 1960, Vol. 48, No. 2, p. 164
4237 of 1959	Feb. 1960, Vol. 48, No. 2, p. 164
108 of 1960	Feb. 1960, Vol. 31, No. 2, p. 445
109 of 1960	Sept./Oct. 1960, Vol. 64D, No. 5, p. 589
161 of 1960	Nov. 1959, Vol. 64, No. 11, p. 2036
171 of 1960	May & Oct. 1960, Vol. 48, Nos. 5 & 10, pp. 931 & 1755
342 of 1960	Nov. 1958, Vol. 12, No. 11, p. 526
422 of 1960	Jan. 1959, Vol. 12, No. 1, p. 58
566 of 1960	1st Nov. 1959, Vol. 3, No. 9, p. 441
635 of 1960	9th Jan. 1960, Vol. 185, No. 4706, p. 76
863 of 1960	Dec. 1959, Vol. 64, No. 12, p. 2470
1089 of 1960	April 1960, Vol. 32, No. 4, p. 515
1300 of 1960	Dec. 1959, Vol. 14, No. 12, p. 1835
1353 of 1960	March 1960, Vol. 31, No. 3, p. 353
1401 of 1960	Aug. 1959, Vol. 14, No. 8, p. 1122
1540 of 1960	April 1959, Vol. 46, No. 8, p. 276
1651 of 1960	5th Aug. 1959, Vol. 155, No. 5, p. 635
1911 of 1960	June 1960, Vol. 48, No. 6, Part 1, p. 1159
2101 of 1960	15th March 1960, Vol. 4, No. 6, p. 320
2210 of 1960	June 1960, Vol. 32, No. 6, p. 775
2218 of 1960	April 1960, Vol. 32, No. 4, p. 515
2282 of 1960	May 1959, Vol. 13, No. 5, p. 155
2357 of 1960	Dec. 1959, Vol. 13, No. 4, p. 293
2642 of 1960	July 1960, Vol. 37, No. 7, p. 283
2718 of 1960	Sept.–Dec. 1959, Vol. 44, No. 3, p. 321
3053 of 1960	15th July 1960, Vol. 5, No. 2, p. 75
3108 of 1960	Aug. 1960, Vol. 2, No. 4, p. 263
3322 of 1960	March 1960, Vol. 15, No. 3, p. 539
3324 of 1960	March 1960, Vol. 8, No. 3, p. 225
3473 of 1960	Nov. 1960, Vol. 65, No. 11, p. 3858
3732 b of 1960	Sept. 1960, Vol. 20, No. 9, p. 642
3906 of 1960	Jan. 1960, Vol. 15a, No. 1, p. 92
4191 of 1960	Sept./Oct. 1960, Vol. 64D, No. 5, p. 589

LIST OF JOURNALS

A selection of the journals which are regularly scanned is given below, together with the addresses of their publishers or editorial offices and the abbreviations of their titles as used in the Abstracts and References. Applications for copies of any journal should be made to the addresses given.

The full title of each journal is given in bold type and is followed by the address, the abbreviated title being shown within brackets. In a few cases, the nature of a journal is indicated, where neither the title nor the address shows it clearly.

A

Acta Polytechnica Scandinavica, Publishing Office, Box 5073, Stockholm 5, Sweden. (*Acta polyt. scand.*)

Acustica, S. Hirzel Verlag, Stuttgart-N, Germany. (*Acustica*)

Akusticheskii Zhurnal, Moskva, Kuznetskii most, dom 9/10, U.S.S.R. (*Akust. Zh.*)

Alta Frequenza, Associazione Elettrotecnica Italiana, Milano (202), Via S. Paolo 10, Italy. (*Alta Frequenza*)

Anais da Academia Brasileira de Ciências, Caixa Postal 229, Rio de Janeiro, Brazil. (*Ann. Acad. bras. Sci.*)

Annalen der Physik, J. A. Barth, Leipzig C1, Salomonstrasse 18B, East Germany. (*Ann. Phys., Lpz.*)

Annales de Géophysique, Service des Publications du C.N.R.S., 13 Quai Anatole France, Paris 7e, France. (*Ann. Géophys.*)

Annales de Physique, Masson & Cie, 120 Boulevard Saint-Germain, Paris 6e, France. (*Ann. Phys., Paris*)

Annales de Radioélectricité, 10 rue Carducci, Paris 19e, France. (*Ann. Radioélect.*)

Annales des Télécommunications, 3 & 5 Boulevard Pasteur, Paris 15e, France. (*Ann. Télécommun.*)

Applied Scientific Research, Martinus Nijhoff, The Hague, Netherlands. (*Appl. sci. Res.*)

Archiv der elektrischen Übertragung, S. Hirzel Verlag, Stuttgart, Germany. (*Arch. elekt. Übertragung*)

Archiv für Elektrotechnik, Springer Verlag, Berlin-Wilmersdorf, Heidelberger Platz 3, Germany. (*Arch. Elektrotech.*)

Archiv für technisches Messen, R. Oldenbourg KG, München 8, Rosenheimer Str. 145, Germany. (*Arch. tech. Messen*)

A.T.E. Journal, Automatic Telephone & Electric Co. Ltd, Strowger Works, Liverpool 7, England. (*A.T.E. J.*)

Audio, Radio Magazines, Inc., P.O. Box 629, Mineola, N.Y., U.S.A. (*Audio*)

Australian Journal of Physics, Commonwealth Scientific and Industrial Research Organization, 314 Albert Street, East Melbourne C.2, Victoria, Australia. (*Aust. J. Phys.*)

A.W.A. Technical Review, Amalgamated Wireless (Australasia) Ltd, Sydney, Australia. (*A.W.A. tech. Rev.*)

B

B.B.C. Engineering Division Monographs, British Broadcasting Corporation, 35 Marylebone High Street, London, W.1, England. (*B.B.C. Engng Div. Monographs*)

Beama Journal, British Electrica and Allied Manufacturers' Association, 36 Kingsway, London, W.C.2, England. (*Beama J.*)

Bell Laboratories Record, 463 West Street, New York 14, N.Y., U.S.A. (*Bell Lab. Rec.*)

Bell System Technical Journal, American Telephone and Telegraph Company, 195 Broadway, New York 7, N.Y., U.S.A. (*Bell Syst. tech. J.*)

British Communications & Electronics, Heywood & Co. Ltd, Drury House, Russell Street, Drury Lane, London, W.C.2, England. (*Brit. Commun. Electronics*)

British Journal of Applied Physics, 47 Belgrave Square, London, S.W.1, England. (*Brit. J. appl. Phys.*)

Bulletin de l'Association Suisse des Electriciens, Seefeldstrasse 301, Zürich 8, Switzerland. (*Bull. schweiz. elektrotech. Ver.*)

C

Câbles & Transmission, Sotelec, 16 rue de la Baume, Paris 8e, France. (*Câbles & Transm.*)

Canadian Journal of Physics, National Research Council, Ottawa 2, Ont., Canada. (*Canad. J. Phys.*)

Chalmers tekniska Högskolas Handlingar, Gumperts Förlag, Göteborg, Sweden. (*Chalmers tek. Högsk. Handl.*)

Communication and Electronics, American Institute of Electrical Engineers, 20th and Northampton Streets, Easton, Pa, U.S.A. (*Commun. & Electronics*)

Communications on Pure and Applied Mathematics, Interscience Publishers Inc., 250 Fifth Avenue, New York 1, N.Y., U.S.A. (*Commun. pure appl. Math.*)

Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences, Gauthier-Villars, 55 Quai des Grands-Augustins, Paris 6e, France. (*C. R. Acad. Sci., Paris*)

Current Science, Current Science Association, Bangalore-6, India. (*Curr. Sci.*)

D

Doklady Akademii Nauk S.S.S.R., Moskva, B-62, Podsosenskii per., 21, U.S.S.R. (*Dokl. Ak. Nauk S.S.S.R.*)

E

E.B.U. Review, Part A, 32 avenue Albert Lancaster, Bruxelles 18, Belgium. (*E.B.U. Rev.*)

Electrical Engineering, American Institute of Electrical Engineers, 33 West 39th Street, New York 18, N.Y., U.S.A. (*Elect. Engng, N.Y.*)

Electronic Applications, N. V. Philips' Gloeilampenfabrieken, Technical and Scientific Literature Department, Eindhoven, Netherlands. (*Electronic Applic.*)

Electronic Engineering, 28 Essex Street, Strand, London, W.C.2., England. (*Electronic Engng*)

Electronic Equipment Engineering, Sutton Publishing Company Inc., 172 South Broadway, White Plains, N.Y., U.S.A. (*Electronic Equipm. Engng*)

Electronic Industries, Chestnut and 56th Sts, Philadelphia 39, Pa, U.S.A. (*Electronic Ind.*)

Electronic & Radio Engineer. See Electronic Technology.

Electronic Technology, Iliffe & Sons Ltd, Dorset House, Stamford Street, London, S.E.1, England. (*Electronic Technol.*)

Electronics, 330 West 42nd Street, New York 36, N.Y., U.S.A. (*Electronics*)

Elektronik, Franzis-Verlag, München 37, Karlstrasse 35, Germany. (*Elektronik*)

Elektronische Rundschau, Verlag für Radio-Foto-Kinotechnik G.m.b.H., Berlin-Borsigwalde, Eichborndamm 141–167, Germany. (*Elektronische Rundschau*)

Elektrotechnische Zeitschrift, Edition A & B, VDE-Verlag G.m.b.H., Berlin-Charlottenburg 2, Bismarckstrasse 33, Germany. (*Elektrotech. Z.*)

Engineer, 28 Essex Street, London, W.C.2, England. (*Engineer, Lond.*)

Engineering, 36 Bedford Street, London, W.C.2, England. (*Engineering, Lond.*)

Ericsson Technics, Telefonaktiebolaget L. M. Ericsson, Stockholm 32, Sweden. (*Ericsson Tech.*)

F

Fizika Tverdogo Tela, Leningrad, V-164, Mendeleevskaya lin., 1, U.S.S.R. (*Fiz. Tverdogo Tela*)

Frequenz, Fachverlag Schiele & Schön G.m.b.H., Berlin S.W.61, Markgrafenstrasse 11, Germany. (*Frequenz*)

G

Geofísica Pura e Applicata, Istituto Geofísico Italiano, Milano, Piazza Leonardo da Vinci 12, Italy. (*Geofis. pura appl.*)

Geophysical Journal of the Royal Astronomical Society, Burlington House, London, W.1, England. (*Geophys. J. R. astr. Soc.*)

H

Helvetica Physica Acta, Journal of the Schweizerische Physikalische Gesellschaft, Birkhäuser Verlag, Basel, Switzerland. (*Helv. phys. Acta*)

Hochfrequenztechnik und Elektroakustik, Akademische Verlagsgesellschaft Geest & Portig K.-G., Leipzig C1, Sternwartenstr. 8, East Germany. (*Hochfrequenztech. u. Elektroakust.*)

I

IBM Journal of Research and Development, International Business Machines Corporation, 590 Madison Avenue, New York 22, N.Y., U.S.A. (*IBM J. Res. Developm.*)

Indian Journal of Meteorology and Geophysics, Manager of Publications, Civil Lines, Delhi 8, India. (*Indian J. Met. Geophys.*)

Indian Journal of Physics (and Proceedings of the Indian Association for the Cultivation of Science), 2 & 3 Lady Willingdon Road, Calcutta 32, India. (*Indian J. Phys.*)

Izvestiya Akademii Nauk S.S.S.R. (*a*) seriya fizicheskaya, Moskva, B-64, Podsosenskii per., 21, U.S.S.R., (*b*) seriya geofizicheskaya, Moskva, B. Gruzinskaya, 10, U.S.S.R., (*c*) otdelenie tekhnicheskikh nauk, Moskva, M. Khariton'evskii per., 4, U.S.S.R. (*Izv. Ak. Nauk S.S.S.R.*, (*a*) *ser. fiz.*, (*b*) *ser. geofiz.*, (*c*) *otd. tekh. nauk*)

J

Journal of the Acoustical Society of America, American Institute of Physics, 335 East 45th Street, New York 17, N.Y., U.S.A. (*J. acoust. Soc. Amer.*)

Journal of the American Ceramic Society, 20th and Northampton Streets, Easton, Pa, U.S.A. (*J. Amer. ceram. Soc.*)

Journal of Applied Physics, American Institute of Physics, 335 East 45th Street, New York 17, N.Y., U.S.A. (*J. appl. Phys.*)

Journal of Atmospheric and Terrestrial Physics, Pergamon Press Ltd, 4 & 5 Fitzroy Square, London, W.1, England. (*J. atmos. terr. Phys.*)

Journal of the Audio Engineering Society, P.O. Box 12, Old Chelsea Station, New York 11, N.Y., U.S.A. (*J. audio Engng Soc.*)

Journal of the British Institution of Radio Engineers, 9 Bedford Square, London, W.C.1, England. (*J. Brit. Instn Radio Engrs*)

Journal of the British Interplanetary Society, 12 Bessborough Gardens, London, S.W.1, England. (*J. Brit. interplan. Soc.*)

Journal of the Electrochemical Society, 1860 Broadway, New York 23, N.Y., U.S.A. (*J. electrochem. Soc.*)

Journal of Electronics and Control, Taylor & Francis Ltd, Red Lion Court, Fleet Street, London, E.C.4, England. (*J. Electronics Control*)

Journal of the Franklin Institute, Benjamin Franklin Parkway at Twentieth Street, Philadelphia 3, Pa, U.S.A. (*J. Franklin Inst.*)

Journal of Geomagnetism and Geoelectricity, Society of Terrestrial Magnetism and Electricity of Japan, Geophysical Institute, Kyoto University, Kyoto, Japan. (*J. Geomag. Geoelect.*)

Journal of Geophysical Research, 1515 Massachusetts Avenue, N.W., Washington 5, D.C., U.S.A. (*J. geophys. Res.*)

Journal of the Indian Institute of Science, Indian Institute of Science, Bangalore 12, India. (*J. Indian Inst. Sci.*)

Journal of the Institute of Navigation, John Murray Ltd, 50 Albemarle Street, London, W.1, England. (*J. Inst. Nav.*)
Journal of the Institution of Electrical Engineers, Savoy Place, London, W.C.2, England. (*J. Instn elect. Engrs*)
Journal of the Institution of Engineers, Australia, Science House, Gloucester and Essex Streets, Sydney, Australia. (*J. Instn Engrs Aust.*)
Journal of the Institution of Telecommunication Engineers, Post Box 481, New Delhi, India. (*J. Instn Telecommun. Engrs, India*)
Journal of Mathematics and Physics, Massachusetts Institute of Technology, Cambridge 39, Mass., U.S.A. (*J. Math. Phys.*)
Journal of the Optical Society of America, American Institute of Physics, 335 East 45th Street, New York 17, N.Y., U.S.A. (*J. opt. Soc. Amer.*)
Journal of the Physical Society of Japan, Maruzen Publishing Co., P.O. Box 605 Central, Tokyo, Japan. (*J. phys. Soc. Japan*)
Journal of the Physics and Chemistry of Solids, Pergamon Press Ltd, 4 & 5 Fitzroy Square, London, W.1, England. (*J. Phys. Chem. Solids*)
Journal de Physique et le Radium, 12 place Henri-Bergson, Paris 8e, France. (*J. Phys. Radium*)
Journal of the Radio Research Laboratories, Ministry of Posts and Telecommunications, Kokubunji P.O., Tokyo, Japan. (*J. Radio Res. Labs, Japan*)
Journal of Research of the National Bureau of Standards, Sections: A. Physics and Chemistry, B. Mathematics and Mathematical Physics, C. Engineering and Instrumentation, D. Radio Propagation, U.S. Government Printing Office, Washington 25, D.C., U.S.A. (*J. Res. nat. Bur. Stand.*)
Journal of Scientific Instruments, 47 Belgrave Square, London, S.W.1, England. (*J. sci. Instrum.*)
Journal of the Society of Motion Picture and Television Engineers, 55 West 42nd Street, New York 36, N.Y., U.S.A. (*J. Soc. Mot. Pict. Telev. Engrs*)
Journal of the Television Society, 166 Shaftesbury Avenue, London, W.C.2, England. (*J. Telev. Soc.*)

K

Kungl. Tekniska Högskolans Handlingar, AB Henrik Lindståhls Bokhandel i Distribution, Stockholm, Sweden. (*Kungl. tek. Högsk. Handl., Stockholm*)

M

Marconi Review, Marconi House, Chelmsford, England. (*Marconi Rev.*)
Metal Treatment, Industrial Newspapers Ltd, 17–19 John Adam Street, London, W.C.2, England. (*Metal Treatm.*)
Monthly Notices of the Royal Astronomical Society, Burlington House, London, W.1, England. (*Mon. Not. R. astr. Soc.*)
Mullard Technical Communications, Mullard House, Torrington Place, London, W.C.1, England. (*Mullard tech. Commun.*)

N

Nachrichtentechnik, V.E.B. Verlag Technik, Berlin C2, Oranienburger Str. 13/14, East Germany. (*NachrTech.*)
Nachrichtentechnische Zeitschrift, F. Vieweg & Sohn, (20b) Braunschweig, Burgplatz 1, Germany. (*Nachrichtentech. Z.*)
Nature, Macmillan & Co. Ltd, St. Martin's Street, London, W.C.2, England. (*Nature, Lond.*)
Naturwissenschaften, Springer Verlag, Berlin-Wilmersdorf, Heidelberger Platz 3, Germany. (*Naturwissenschaften*)
Note Recensioni e Notizie, Istituto Superiore delle Poste e delle Telecomunicazioni, Viale Trastevere 189, Roma, Italy. (*Note Recensioni Notiz.*)
Nucleonics, 330 West 42nd Street, New York 36, N.Y., U.S.A. (*Nucleonics*)
Nuovo Cimento, Editore Nicola Zanichelli, Bologna, Via Irnerio 34, Italy. (*Nuovo Cim.*)

O

Observatory, Royal Greenwich Observatory, Herstmonceux Castle, Hailsham, Sussex, England. (*Observatory*)
l'Onde Électrique, Éditions Chiron, 40, rue de Seine, Paris 6e, France. (*Onde elect.*)
Optik, Wissenschaftliche Verlagsgesellschaft m.b.H., Stuttgart 1, Postfach 40, Germany. (*Optik, Stuttgart*)

P

Philips Research Reports, N. V. Philips' Gloeilampenfabrieken, Eindhoven, Netherlands. (*Philips Res. Rep.*)
Philips Technical Review, as for Philips Research Reports. (*Philips tech. Rev.*)
Philips Telecommunication Review, Philips Telecommunication Division, P.O. Box 32, Hilversum, Netherlands. (*Philips Telecommun. Rev.*)
Philosophical Magazine, Taylor & Francis Ltd, Red Lion Court, Fleet Street, London, E.C.4, England. (*Phil. Mag.*)
Physica, Physica Foundation, Lucas Bolwerk 4, Utrecht, Netherlands. (*Physica*)
Physical Review, American Institute of Physics, 335 East 45th Street, New York 17, N.Y., U.S.A. (*Phys. Rev.*)
Physical Review Letters, American Institute of Physics, 335 East 45th Street, New York 17, N.Y., U.S.A. (*Phys. Rev. Lett.*)
Planetary and Space Science, 4 & 5 Fitzroy Square, London, W.1, England. (*Planet. Space Sci.*)
Point to Point Telecommunications, Communications Division, Marconi's Wireless Telegraph Co. Ltd, Chelmsford, England. (*Point to Point Telecommun.*)
Post Office Electrical Engineers' Journal, G.P.O., 2–12 Gresham Street, London, E.C.2, England. (*P.O. elect. Engrs' J.*)
Priroda, Moskva, Tsentr, Malyi Khariton'evskii per., 4, U.S.S.R. (*Priroda, Mosk.*)
Proceedings of the Cambridge Philosophical Society (Mathematical and Physical Sciences), Cambridge University Press, Bentley House, 200 Euston Road, London, N.W.1, England. (*Proc. Camb. phil. Soc.*)
Proceedings of the Institute of Radio Engineers, 1 East 79th Street, New York 21, N.Y., U.S.A. (*Proc. Inst. Radio Engrs.*)
Proceedings of the Institution of Electrical Engineers, Parts A, B and C, Savoy Place, London, W.C.2, England. (*Proc. Instn elect. Engrs*)
Proceedings of the Institution of Radio Engineers, Australia, Science House, 157 Gloucester Street, Sydney, N.S.W., Australia. (*Proc. Instn Radio Engrs, Aust.*)
Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen, North-Holland Publishing Company, Amsterdam, Netherlands. (*Proc. kon. ned. Akad. Wetensch.*)
Proceedings of the National Institute of Sciences of India, Mathura Road, New Delhi, India. (*Proc. nat. Inst. Sci. India*)
Proceedings of the Physical Society, 1 Lowther Gardens, Prince Consort Road, London, S.W.7, England. (*Proc. phys. Soc.*)
Proceedings of the Royal Society, Burlington House, Piccadilly, London, W.1, England. (*Proc. roy. Soc.*)
Proceedings and Transactions of the Rhodesia Scientific Association, P.O. Box 978, Salisbury, S. Rhodesia. (*Proc. Trans. Rhod. sci. Ass.*)
Progress of Theoretical Physics, The Publication Office, Yukawa Hall, Kyoto University, Kyoto, Japan. (*Progr. theor. Phys.*)

Q

QST, American Radio Relay League Inc., 38 La Salle Road, West Hartford 7, Conn., U.S.A. (*QST*)
Quarterly of Applied Mathematics, Brown University, Providence 12, R.I., U.S.A. (*Quart. appl. Math.*)
Quarterly Journal of Mechanics and Applied Mathematics, Oxford University Press, Amen House, London, E.C.4, England. (*Quart. J. Mech. appl. Math.*)
Quarterly Journal of the Royal Meteorological Society, 49 Cromwell Road, London, S.W.7, England. (*Quart. J. R. met. Soc.*)

R

Radio-Electronics, 154 West 14th St., New York 11, N.Y., U.S.A. (*Radio-Electronics*)
Radioschau, Technischer Verlag Erb, Wien VI, Mariahilferstrasse 71, Austria. (*Radioschau*)
Radiotekhnika, Moskva, K-9, ul. Gor'kogo, 7, 3-i pod"ezd, U.S.S.R. (*Radiotekhnika, Mosk.*)
Radiotekhnika i Elektronika, Moskva, K-9, Mokhovaya, 11, U.S.S.R. (*Radiotekhnika i Elektronika*)
RCA Review, RCA Laboratories, Princeton, N.J., U.S.A. (*RCA Rev.*)
Report of Ionosphere Research in Japan. See Report of Ionosphere and Space Research in Japan.
Report of Ionosphere and Space Research in Japan, Ionosphere Research Committee, Science Council of Japan, Ueno Park, Tokyo, Japan. (*Rep. Ionos. Space Res. Japan*)
Reports of the Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, 1551 Kitizyozi Musasino-Si, Tokyo, Japan. (*Rep. elect. Commun. Lab., Japan*)
Research, Butterworth's Scientific Publications Ltd, 88 Kingsway, London, W.C.2, England. (*Research, Lond.*)
Review of Scientific Instruments, American Institute of Physics, 335 East 45th Street, New York 17, N.Y., U.S.A. (*Rev. sci. Instrum.*)
Reviews of Modern Physics, American Institute of Physics, 335 East 45th Street, New York 17, N.Y., U.S.A. (*Rev. mod. Phys.*)
Revista de Telecomunicación, Palacio de Comunicaciones, Madrid, Spain. (*Rev. Telecomunicación, Madrid*)
Revue HF, 55 rue Defacqz, Bruxelles, Belgium. (*Rev. HF, Brussels*)
Ricerca scientifica, S.P.E.R.A., Via Tacito 10 Roma, Italy. (*Ricerca sci.*)
R.S.G.B. Bulletin, New Ruskin House, Little Russell Street, London, W.C.1, England. (*R.S.G.B. Bull.*)
Rundfunktechnische Mitteilungen, H. H. Nölke G.m.b.H., Hamburg 20, Hegestrasse 40, Germany. (*Rundfunktech. Mitt.*)

S

Science, 1515 Massachusetts Avenue, N.W., Washington 5, D.C., U.S.A. (*Science*)
Science and Culture, 92 Acharya Prafullachandra Road, Calcutta-9, India. (*Sci. and Cult.*)
Science Progress, Edward Arnold Ltd, 41 Maddox Street, London, W.1, England. (*Sci. Progr.*)
Science Reports of the Research Institutes Tohoku University, Series A and B, Tohoku University, Sendai, Japan. (*Sci. Rep. Res. Inst. Tohoku Univ.*)
Scientific American, 415 Madison Avenue, New York 17, N.Y., U.S.A. (*Sci. Amer.*)
Short Wave Magazine, 55 Victoria Street, London, S.W.1, England. (*Short Wave Mag.*)
Sky and Telescope, Sky Publishing Corporation, Harvard College Conservatory, Cambridge 38, Mass., U.S.A. (*Sky & Telesc.*)

T

Technical News Bulletin of the National Bureau of Standards, U.S. Government Printing Office, Washington 25, D.C., U.S.A. (*Tech. News Bull. nat. Bur. Stand.*)
Technische Mitteilungen aus dem Betriebslaboratorium für Rundfunk und Fernsehen, Agastrasse, Berlin-Adlershof, East Germany. (*Tech. Mitt. BRF, Berlin*)
Technische Mitteilungen PTT, Journal of the Swiss Post Office, Bern, Speichergasse 6, Switzerland. (*Tech. Mitt. PTT*)
Telefunken-Röhre, Franzis-Verlag, München, Germany. (*Telefunken-Röhre*)
Telefunken Zeitung, Telefunken G.m.b.H., Berlin-Charlottenburg 1, Ernst-Reuter-Platz, Haus der Elektrizität, Germany. (*Telefunken Ztg*)
Teleteknik, 9 Valkendorfsgade, Copenhagen, K., Denmark. (*Teleteknik, Copenhagen*)
Tellus, Lindhagensgatan 124, Stockholm, Sweden. (*Tellus*)
Tijdschrift van het Nederlands Radiogenootschap, Prinses Marijkelaan 7, Leidschendam, Netherlands. (*Tijdschr. ned. Radiogenoot.*)
Transactions of the Institute of Radio Engineers, 1 East 79th Street, New York 21, N.Y., U.S.A. (*Trans. Inst. Radio Engrs*)
Transactions of the South African Institute of Electrical Engineers, P.O. Box 5907, Johannesburg, South Africa. (*Trans. S. Afr. Inst. elect. Engrs*)
TVF, Stockholm, Sweden. (*TVF, Stockholm*)

U

Uspekhi fizicheskikh Nauk, Moskva, V-71, Leninskif prospekt, 15, U.S.S.R. (*Usp. fiz. Nauk*)

V

VDI Zeitschrift, VDI-Verlag G.m.b.H., Bongardstrasse 3, Düsseldorf, Germany. (*VDI Z.*)
Le Vide, Journal of the Société Française des Ingénieurs et Techniciens du Vide, 147 ter A, Boulevard de Strasbourg, Nogent-sur-Marne, France. (*Le Vide*)

W

Wire and Radio Communications, P.O. Box 20, Ridgewood, N.J., U.S.A. (*Wire Radio Commun.*)
Wireless World, Iliffe & Sons Ltd, Dorset House, Stamford Street, London, S.E.1, England. (*Wireless World*)

Z

Zeitschrift für angewandte Mathematik und Physik, Birkhäuser-Verlag, Basel, Switzerland (*Z. angew. Math. Phys.*)
Zeitschrift für angewandte Physik, Springer-Verlag, Berlin-Wilmersdorf, Heidelberger Platz 3, Germany. (*Z. angew. Phys.*)
Zeitschrift für Astrophysik, Springer-Verlag, Berlin-Wilmersdorf, Heidelberger Platz 3, Germany. (*Z. Astrophys.*)
Zeitschrift für Metallkunde, Dr. Riederer-Verlag G.m.b.H., Stuttgart, Marienstrasse 52, Germany. (*Z. Metallkde*)
Zeitschrift für Meteorologie, Akademie-Verlag G.m.b.H., Berlin W.1, Leipziger Strasse 3–4, East Germany. (*Z. Met.*)
Zeitschrift für Naturforschung, (14b) Tübingen, Postfach 61, Germany. (*Z. Naturf.*)
Zeitschrift für Physik, Springer-Verlag, Berlin-Wilmersdorf, Heidelberger Platz 3, Germany. (*Z. Phys.*)
Zhurnal eksperimental'noi i teoreticheskoi Fiziki, Moskva, V-133, Vorob'evskoe shosse, 2, U.S.S.R. (*Zh. eksp. teor. Fiz.*)
Zhurnal tekhnicheskoi Fiziki, Leningrad V-164, Mendeleevskaya lin., 1, U.S.S.R. (*Zh. tekh. Fiz.*)